

Acc. Nr:

AP0049946

Abstracting Service:
CHEMICAL ABST. 5-70

Ref. Code:

UR 0495

101689y Conditions for the preparation of porous films from solutions of carboxyl-containing rubbers and blocked diisocyanates. Ostrovskii, V. I.; Khromova, N. S.; Pavlov, S. A. (USSR). *Khim. Prom. 1970, 12(1), 54-8 (Russ)*. The optimum amts. of filler (cotton fibers 0.1-0.4 mm long) and pore-forming agents [2,4-tolylene diisocyanate dimer (I) or 2,4-tolylene diisocyanate partially reacted with Et acetoacetate, i.e. "blocked diisocyanate" (II)] were detd. in the manuf. of artificial leather based on butadiene-styrene-methacrylic acid copolymers. The presence of 3-5% stearic acid (IV) in I increased the pore sizes of artificial leather and decreased the desirable hydrophilic nature of I. The most uniform pore distribution, satisfactory strength, and elasticity were obtained with 50% I (from which IV was extd. with Et₂O-EtOH mixt.) and 1.5 g-equiv. III; II imparted greater strength, but gave a lower H₂O-absorption capacity.

CPJR

REEL/FRAME
19801882

USSR

UDC 621.039.53

KUROLENKIN, Ye. I., BURDAKOV, N. S., VIRGIL'YEV, Yu. S., ~~OSTROVSKIY, V. S.~~
TURDAKOV, V. N., CHURILOV, Yu. S.

"Influence of Oxidation on Strength Properties of Graphite"

Atomnaya Energiya, Vol 32, No 4, Apr 72, p 312.

Abstract: This short article studies the influence of the degree of oxidation on compressive strength and on volumetric weight, characterized by porosity, for two commercial types of structural graphite, types GMZ and MPG. Studies were performed using cylindrical graphite specimens, 8 mm in diameter and 80 mm long, which were oxidized in an electric furnace in air at 700°C. The degree of oxidation was determined by weight loss of the specimen. It was found that at a 600-800°C oxidation temperature, the drop in volumetric weight occurs primarily in the surface layer. This agrees with the two-stage mechanism of oxidation of graphite, showing that in this temperature interval the process is intermediate between kinetic and diffusion processes. Graphs are presented showing the change in compressive strength and volumetric weight of the graphite with degree of oxidation.

1/1

Acc. Nr:

AP 0046179

Abstracting Service:
GEOPHYSICAL ABST.

Ref. Code:

U R 0 4 6 7

91797r Effect of structure on some physical properties of carbon materials. Nagornyi V. G.; Ostrovskii V. S. (USSR). *Khim. Tverd. Topl.* 1970, (1), 110-117 (USSR). The dependence of the amt. of closed pores, P_c , assumed to be filled with amorphous C not forming crystallites, and of Young modulus of elasticity, E , on the temp., t , at which the coke had been treated is analogous. E and the sp. elec. resistivity increased with P_c . The pycnometric d. of the material $d_t = d_{cr} (1 - n) + d_{am} n$, where d_{cr} is the x-ray d. of the cryst. phase, n is the relative content of non-ordered phase with a d. d_{am} , and $n/P_c = d_{cr}/(d_{cr} - d_{am})$. The P_c of petroleum coke increased with t to a max. at 600°. Beyond the max. it decreased sharply as t increased. But at $t = 1500-2500^\circ$ a slight max. appeared at 2100°. It was similar to the max. of the Hall const., R . At $t = 1500-2500^\circ$, R increased linearly with P_c . Crystallites and non-ordered material detd. the phys. properties of coke.

GBJR

REEL/FRA
19781256

g.

18

1/2 023
UNCLASSIFIED
TITLE--THE ALL SOVIET TELEVISION CENTER OSTANKINO, PART I -U-
PROCESSING DATE--230CT70
AUTHOR--(02)-OSTROVSKIY, J.V., RENARD, V.B.
COUNTRY OF INFO--USSR
SOURCE--BERLIN, NACHRICHTENTECHNIK, VOL 20, NO 4, APRIL 1970, PP 121-128
DATE PUBLISHED----APR 70
SUBJECT AREAS--NAVIGATION
TOPIC TAGS--TV BROADCASTING, TV EQUIPMENT, TV NETWORK, TV ANTENNA
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1999/0161
STEP NO--GE/9009/70/020/004/0121/0128
CIRC ACCESSION NO--AP0122414
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0122414

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE ARTICLE DESCRIBES THE NEW TELEVISION CENTER WHICH HAS BEEN ERECTED WITH A 533 M HIGH TRANSMITTER TOWER AT THE NORTHERN OUTSKIRTS OF MOSCOW. THE CONSTRUCTION OF THAT TOWER AND THE ADJOINING STUDIO FACILITIES TOOK ABOUT 3 AND ONE HALF YEARS; IT NOW PROVIDES SIX PROGRAMS (350 PROGRAM HOURS WEEKLY) OVER A NETWORK COVERING THE ENTIRE SOVIET UNION. BOTH BLACK AND WHITE AND COLOR BROADCASTING IS POSSIBLE, ALSO EXCHANGE AND HOOK UP WITH OTHER COUNTRIES. BOTH THE VIDEO AND AUDIO EQUIPMENT IS OF HIGHEST QUALITY, THE FILM CAMERAS ARE PROVIDED WITH ELECTRONIC SCANNERS AND ELECTRONIC PICTURE CONTROL, THE LIGHT SOURCES ARE OF THE LATEST MODELS WHOSE SPECTRAL AND BRIGHTNESS SENSITIVITIES MATCH CLOSELY THOSE OF THE HUMAN EYE. THE VARIOUS TECHNICAL ASPECTS OF THE PROGRAMS AS WELL AS THE GENERAL CONSTRUCTION AND OPERATION OF THE TRANSMITTER STATION ARE DESCRIBED. OF PARTICULAR INTEREST IS THE ANTENNA POLE: THE CHOICE OF THE TYPE OF CONSTRUCTION IS DISCUSSED, BASIC DESIGN CALCULATIONS ARE SHOWN WHICH TAKE INTO CONSIDERATION ALSO MAXIMUM PERMISSIBLE DEFLECTION OF THE POLE, AND THE ESSENTIAL APPARATUS COMPONENTS ARE DESCRIBED. CONTINUATION OF THE ARTICLE IS TO FOLLOW. NO BIBL. REF. ARE LISTED. MANUSCRIPT DATE NOT GIVEN. FACILITY: ALL SOVIET TELEVISION CENTER, MOSCOW.

UNCLASSIFIED

USSR

OSTROVSKIY, Ye. I.

UDC: 519.2

"A Limit Theorem for the Local Time and Dimensionality of a Set of Zeros of a Gaussian Process"

Vestn. Mosk. un-ta. Mat., mekh., 1973, No 2, pp 23-29 (from RZh-Kiber-netika, No 7, Jul 73, abstract No 7V107 by the author)

Translation: A study is made of the asymptotic behavior at zero of the local time of the Gaussian process x_t $t \in [0,1]$ with correlation function $R(t,s)$. Local time is defined by the quantity

$$\phi_t = \lim_{n \rightarrow \infty} \int_0^t f_n(x_s) ds, \quad f_n(y) = \begin{cases} n, & |y| < \frac{1}{n} \\ 0, & |y| > \frac{1}{n} \end{cases}$$

The existence of ϕ_t is proved assuming certain limitations on $R(t,s)$.
If there exists a limit

$$\lim_{t \rightarrow 0} \frac{R(tu, tv)}{t^\alpha} = K(u, v).$$

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OSTROVSKIY, Ye. I., Vestn. Mosk. un-ta, Mat., Mekh., 1973, No 2, pp 23-29
 where $\alpha \in (0, 2)$, K is continuous and does not vanish, then there is a
 limit theorem

$$\lim_{t \rightarrow 0} P \left\{ \frac{\varphi_t}{t^{1-\frac{\alpha}{2}}} < x \right\} = F_K(x),$$

where the limiting distribution F_K is nondegenerate and has all moments.
 As a corollary, the following result is found: if for any $\tau \in [0, 1]$ there
 exists a limit

$$\lim_{t \rightarrow 0} \frac{R^x(tu, tv)}{t^\alpha} = K_\tau(u, v),$$

where $R^x(t, s) = M(x_{t+s} - x_t)(x_{s+\tau} - x_\tau)$ α is independent of τ , $K_\tau(u, v)$ is continuous
 and does not vanish or become infinite, then the Hausdorff dimensionality
 of the set of zeros x_t is equal to $1 - \frac{\alpha}{2}$ with probability one.

2/2

172 010
TITLE—CONTESTS IN LOGICAL PART OF MULTICYCLE RELAY DEVICES WITH TRIGGERS
USED AS SECONDARY ELEMENTS —U—
AUTHOR—OSTROVSKIY, YU.I.
COUNTRY OF INFO—USSR
SOURCE—AVTOMATIKA I TELEMEXHANIKA, 1970, NR 6, PP 103-109
DATE PUBLISHED—70
SUBJECT AREAS—ELECTRONICS AND ELECTRICAL ENGR., MATHEMATICAL SCIENCES
TOPIC TAGS—ELECTRIC RELAY, MATRIX FUNCTION, LOGIC ELEMENT
CONTROL MARKING—NO RESTRICTIONS
DOCUMENT CLASS—UNCLASSIFIED
PROXY REEL/FAME—2000/1006
CIRC ACCESSION NO—AP0124665
STEP NO—UR/0103/70/000/006/0103/0109
UNCLASSIFIED

2/2 010

CIRC ACCESSION NO--AP0124665
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT. THERE ARE CONSIDERED VARIOUS TYPES
OF CONTESTS IN THE LOGICAL PART OF ASYNCHRONOUS MULTICLYCLE RELAY
DEVICES WITH POTENTIAL ELEMENTS. A POSSIBILITY OF THE EMERGENCE OF THE
CONTESTS THAT CANNOT BE DISCOVERED BY ANY KNOWN METHOD IS STATED, A RULE
FOR DETERMINING SUCH STATES BY THE MATRIX OF THE RELAY DEVICE IS
SUGGESTED.

UNCLASSIFIED

2/2 042

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AM0129349

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS. FROM THE
AUTHOR 3. INTRODUCTION 4. 1 GENERAL PRINCIPLES 5. 2 PROPERTIES
OF HOLOGRAMS 24. 3 EQUIPMENT 34. 4 LASERS 48. 5 CERTAIN
PROBLEMS OF HOLOGRAPHIC TECHNIQUES 56. 6 REPRODUCTION OF THE HAVE
FRONT 65. 7 WHAT IS USED FOR HOLOGRAM RECORDING 76. 8 CERTAIN USES
OF HOLOGRAPHY 89. 9 LITERATURE DEALING WITH HOLOGRAPHY 117.
BIBLIOGRAPHY 119.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--ON SOME CONSEQUENCES OF PROLONGED THIAMINE INJECTION IN THE BODY:
CHANGES IN CARBOHYDRATES PROTEINS, AND LIPIDS METABOLISM -U-
AUTHOR--(05)-OSTROVSKIY, YU.M., LUKASHIK, N.K., TREBUKHINA, R.V., DOSTA,
G.A., MAZHUL, A.G.
COUNTRY OF INFO--USSR
SOURCE--VOPROSY MEDITSINSKOY KHIMII, 1970, VOL 16, NR 3, PP 316-322
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--THIAMINE, CARBOHYDRATE METABOLISM, PROTEIN METABOLISM, LIPID
METABOLISM, ERYTHROCYTE, ENZYME ACTIVITY, BLOOD SERUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1978/0142

STEP NO--UR/0301/70/016/003/0316/0322

CIRC ACCESSION NO--AP0120842

UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120842

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INJECTION OF THIAMINE INTO RATS AND PIGEONS DURING 1-8 MONTHS RESULTED IN THE ELEVATION OF ACTIVITY OF TRANSKETHOLASE IN ERYTHROCYTES AND PYRUVIC ACID DEHYDROGENASE IN HEART AND LIVER. AT THE SAME TIME THE DECREASE IN PHOSPHORYLASE ACTIVITY AND GLYCOGEN ACCUMULATION IN LIVER, THE INCREASE IN PLASMA ALDOLASE AS WELL AS HEART AND MUSCLE ENZYME, GLUCOSE, 6, PHOSPHATASE IN LIVER, GLYCOGENOLYSIS IN ERYTHROCYTES, CHANGES IN PROTEIN FRACTION CONTENT IN BLOOD SERUM, CHANGES IN SH GROUPS CONTENT IN THE BRAIN AND BLOOD PLASMA, AND CHANGES IN GLUTAMATE DECARBOXYLASE IN THE BRAIN WERE OBSERVED. FACILITY: CHAIR OF BIOCHEMISTRY, MEDICAL INSTITUTE, GRODNO.

UNCLASSIFIED

USSR

UDC 669.15.018.44:621.039.5

VOTINOV, S. N., GRINCHUK, P. P., OSTROVSKIY, Z. YE., PROKHOROV, V. I.

"Effect of Irradiation on the Structure of Some Dispersion Hardening Steels"

Radiatsion. fiz. tverd. tela i reaktornoye materialoved. -- V sb. (Radiation Solid State Physics and Reactor Material Science -- collection of works), Moscow, Atomizdat Press, 1970, pp 73-82 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4I845)

Translation: An electron microscope study was made of the effect of neutron irradiation on the structure of two dispersion hardening stainless steels of the austenitic class -- OKh16N15M3B, OKh16N15M3BR and OOKh16N15, which is the Cr-Ni base of the first two. The irradiation was performed in the SM-2 reactor at 680-700° with a fast neutron dosage of $2 \cdot 10^{20} \text{ cm}^{-2}$. OKh16N15M3B steel was also irradiated at 70° in water with a dosage of $4.3 \cdot 10^{21} \text{ cm}^{-2}$. There are 6 illustrations, 1 table, and a 16-entry bibliography.

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Transformation and Structure

USSR

UDC 621.039.53

VOTINOV, S. N., GRINCHUK, P. P., OSTROVSKIY, Z. YE., and PROKHOROV, V. I.

"Effect of Irradiation on the Structure of Certain Dispersion-Hardening Steels"

Radiatsion. Fiz. Tverd. Tela i Reaktornoye Materialoved (Radiation Solid State Physics and Reactor Materials Science -- collection of works), Moscow, Atomizdat Press, 1970, pp 73-82 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 4, 1971, Abstract No 4.50.138)

Translation: Investigations performed with 2-component alloys of certain steels have shown that irradiation accelerates the decomposition of solid solutions with segregation of the excess component or separation of an inter-metallic phase. Irradiation of alloys also results in structural changes noted in non-irradiated specimens only at temperatures higher than the irradiation temperature. 6 figures; 16 biblio. refs.

1/1

USSR

UDC: 621.3.049.75

TURUKIN, G. M., GRITSKOVA, V. V., SHUMILOV, A. S., OSTROZHINSKIY, A. V.,
VESELOVSKAYA, V. A.

"A Method of Metallizing Multilayered Printed-Circuit Boards"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obratztsy, tovarnyye znaki,
No 5, Feb 71, Author's Certificate No 293311, Division H, filed 4 Aug 69,
published 15 Jan 71, p 182

Translation: This Author's Certificate introduces a method of metallizing
printed-circuit boards consisting of several layers. The procedure is based
on sequential chemical and galvanic copper-coating of holes. As a distinguish-
ing feature of the patent, reliable interlayer connections are provided by
galvanic build-up of copper on the end faces of the contact platforms in
the holes of the inner layers before electrochemical metallizing of the holes.
Priority dates from 13 July 1967.

1/1

- 105 -

USSR

MATVEYEV, YU. M., ZAYONCHIK, L. I., SITNIKOV, L. L., OSTRYAKOV, V. V.

"Strain Study of Mechanically Inhomogeneous Bodies Using Optically Sensitive Coatings"

Moscow, Zavodskaya Laboratoriya, Vol XXXVII, No 4, 1971, pp 468-471

Abstract: A study is made of the stress-strain state of mechanically inhomogeneous bodies using optically sensitive coatings. The effect of mechanical inhomogeneity of the medium on the stress-strain state and the nature of development of the zones of plastic flow are estimated. The layer of coatings is applied to the reflecting surface of a bimetal sample, and the optical effect is established in the form of a Moray pattern and the isochrome pattern. The penetration of the zone of plastic flow as a function of the degree of relative reduction during the process of reducing homogeneous discs made of soft and hard lead-antimony alloys and bimetal discs is plotted, and the kinetics of development of the normal stresses in the center of a disc are illustrated for two inhomogeneity diagrams.

1/1

USSR

UDC 621.374.33

VIGDORCHIK, V. G., DARKOV, S. K., KORTEVA, T. V., MEYERSON, S. I., POPOV, V. A., SITNIKOV, O. P., TRYKOV, Yu. V., OSTRYI, Kh. Ya.

"A Magnetic Digital Element"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 21, Jul 71, Author's Certificate No 308518, Division H, filed 16 Feb 70, published 1 Jul 71, pp 207-208

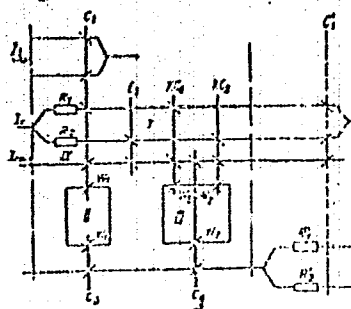
Translation: This Author's Certificate introduces a magnetic digital element which contains information, compensation and two switching cores. The device has a recording circuit, a coupling loop with flux quenching on resistors, and a ready circuit for the switching cores. As a distinguishing feature of the patent, in order to increase speed, improve stability, extend the range of ambient temperature variation and simplify the power supply system, the element is equipped with resistors in the coupling loop, dynamic excitation and dynamic magnetizing cores, one additional winding on each of the switching and compensation cores, and also two additional windings on the information core. The primary windings of the dynamic excitation and dynamic magnetizing cores are connected in series in the circuit of one of the cadence currents. The series-connected auxiliary windings of the switching cores and

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USSR

VIGDORCHIK, V. G., et al., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 21, Jul 71, Author's Certificate No 308518, Division H, filed 16 Feb 70, published 1 Jul 71, pp 207-208

the secondary winding of the dynamic excitation core form a loop for dynamic excitation of the switching cores. The series circuit comprised of the secondary winding of the dynamic magnetizing core and one of the auxiliary windings of the information core forms a loop for dynamic excitation of the information core, and the auxiliary winding of the information core and the third winding of the dynamic excitation core are connected in series to the ready winding of the switching core.



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USSR

UDC: 621.391.84:621.391.883.2

OSTUDIN, V. D., CHERKASSKIY, Yu. A.

"Detection of Signals With Unknown Parameters From Their Integrated Phase Patterns"

V sb. Materialy Nauch.-tekhn. konf. Leningr. elektrotekhn. in-t svyazi. Vyp. 1 (Materials of the Scientific and Technical Conference of the Leningrad Electrical Engineering Institute of Communications -- collection of works, No 1), Leningrad, 1971, pp 16-21 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No 3A20)

Translation: A method is considered for synthesizing receivers which are invariant to unknown signal parameters. The procedure is based on using the integrated phase patterns obtained in a space of coordinates which are integral characteristics of the signals being processed. Resumé.

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USSR

UDC 669.1:538.248 (1)

TELESNIN, R. V., SHISHKOV, A. G., OSUKHOVSKIY, V. E., SIGOV, A. S., and OSUKHOVSKAYA, L. P., Moscow State University imeni M. V. Lomonosov; Far-Eastern State University

"Coercive Force and Creeping of Domain Walls in Permalloy Films 200-1000 Å Thick"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 5, 1973, pp 959-967

Abstract: Using Permalloy films (79Ni4A alloy) of various thickness, an attempt was made to show that creep intensity is a function of film thickness. Films were deposited under vacuum (10^{-5} mm Hg) on polished glass substrates at 250°C in the presence of a magnetic field of 150 oersted. Creep of domain walls was practically absent in films $d < 200$ Å. Maximum creep was observed in films 500-600 Å thick. Films $d > 1200$ Å showed a gradual increase in creep with thickness. A definite relation exists between the creep and the density of cross links in films. The creep of domain walls in films $d \sim 700$ Å took place as the result of sagging of long wall sections containing the largest number of cross links. In general, the creep rate in films 900-1000 Å was slower than that in films with $d \sim 700$ Å. The coercive force of the Neel $1/2$

USSR

TELESNIN, R. V., et al., Fizika Metallov i Metallovedeniye, Vol 35, No 5, 1973, pp 959-967

sections between the cross links did not depend on the film thickness and was ~ 0.1 oersted. As was evident from the powder patterns, the sagging of Neel sections between cross sections takes place uniformly on the film surface. The coercive force (H_{ch}) for films 200, 500, and 800 Å was 0.06, 0.08, and 0.12 oersted, respectively. The coercive force of sections between the sagging points on cross links was $H_c = 0.2-0.3$ oersted (minimum) for 500-700 Å films. It was lower for 200-500 Å films because of intensive scattering of fields which facilitate the breaking of cross links. The macroscopic coercive force of the domain boundary displacement (the starting field of the boundary, H_{cst}) did not change with the film thickness within 200-1000 Å. The value of H_{cst} characterizes the maximum height of potential barriers in front of the domain boundaries. These barriers are represented by points, and they are chaotically distributed on the film surface at a distance of 40-100 μm from each other. Their height varied within several critical values in the interval of 0.3-1.0 oersted. The distance between neighboring points of the domain boundary attachment was responsible for the maximum creep in ~ 600 Å films.

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USSR

UDC 669.1:538.248

TELESNIN, R. V., SHISHKOV, A. G., OSUKHOVSKIY, V. E., SICOV, A. S., and OSUKHOVSKAYA, L. P., Moscow State University imeni M. V. Lomonosov; Far-Eastern State University

"Coercive Force and Creeping of Domain Walls in Permalloy Films 200-1000 Å Thick"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 5, 1973, pp 959-967

Abstract: Using Permalloy films (79NMA alloy) of various thickness, an attempt was made to show that creep intensity is a function of film thickness. Films were deposited under vacuum (10^{-5} mm Hg) on polished glass substrates at 250°C in the presence of a magnetic field of 150 oersted. Creep of domain walls was practically absent in films $d < 200$ Å. Maximum creep was observed in films 500-600 Å thick. Films $d > 1200$ Å showed a gradual increase in creep with thickness. A definite relation exists between the creep and the density of cross links in films. The creep of domain walls in films $d \sim 700$ Å took place as the result of sagging of long wall sections containing the largest number of cross links. In general, the creep rate in films 900-1000 Å was slower than that in films with $d \sim 700$ Å. The coercive force of the Neel $1/2$

USSR

TELESNIN, R. V., et al., Fizika Metallov i Metallovedeniye, Vol 35, No 5, 1973, pp 959-967

sections between the cross links did not depend on the film thickness and was ~ 0.1 oersted. As was evident from the powder patterns, the sagging of Neel sections between cross sections takes place uniformly on the film surface. The coercive force (H_{CH}) for films 200, 500, and 800 Å was 0.06, 0.08, and 0.12 oersted, respectively. The coercive force of sections between the sagging points on cross links was $H_c = 0.2-0.3$ oersted (minimum) for 500-700 Å films. It was lower for 200-500 Å films because of intensive scattering of fields which facilitate the breaking of cross links. The macroscopic coercive force of the domain boundary displacement (the starting field of the boundary, H_{cst}) did not change with the film thickness within 200-1000 Å. The value of H_{cst} characterizes the maximum height of potential barriers in front of the domain boundaries. These barriers are represented by points, and they are chaotically distributed on the film surface at a distance of 40-100 Å from each other. Their height varied within several critical values in the interval of 0.3-1.0 oersted. The distance between neighboring points of the domain boundary attachment was responsible for the maximum creep in ~ 600 Å films.

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USSR

UDC 548.4

MIL'VIDSKII, M. G., OSVENSII, V. B., NOVIKOV, A. G., FOMIN, V. G.,
GRISHINA, S. P., Government Scientific-Research and Planning Institute for the
Rare Metals Industry

"Effect of Thermal Processing on the Ideal Structure of Monocrystals of
Gallium Arsenide Alloyed with Tellurium

Moscow, Kristallografiya, vol 18, No 4, July-August 1973, pp 826-829

The effect of thermal processing (1100°C, 700°C, up to 50 hr) on the physical
properties of gallium arsenide containing 10^{19} tellurium atoms per cubic
centimeter was studied by selective chemical etching, measurement of the
Hall effect, two-crystal spectrometry, diffraction topography, and precision
measurements of the lattice. The electrical properties and monocrystal struc-
tural data indicate a destruction of the supersaturated solid solutions with
formation of a second phase.

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USSR

UDC 548.5

KARATAEV, V. V., MIL'VIDSKII, M. G., ~~OSVENSII, V. B.~~, STOLYAROV, O. G.,
Government Scientific-Research and Planning Institute for the Rare Metals
Industry

"Effective Partition Coefficient of Excess Basic Components in Crystallization
of Gallium Arsenide from a Melt"

Moscow, Kristallografiya, vol 18, No 4, July-August 1973, pp 830-832

Calculations were made of effective partition coefficients for Ga and As with
growth of GaAs monocrystals by crucible-free zone fusion from a melt with
different deviations from stoichiometry. Total impurities were less than
 10^{17} cm^{-3} . The formula used in the calculations is given. When the melt is
enriched in Ga, $k = 6.1 \times 10^{-3}$; when enriched in As, $k = 8.5 \times 10^{-3}$. Since
crystals grow slowly (0.5 mm/min) under the conditions used, the values may be
considered close to equilibrium.

1/1

OSVENSKIY, V.B.

SPRS 55068
6-72

III-7. STUDY OF THE EFFECT OF THE DEVIATION OF THE COMPOSITION FROM THE STOICHIOMETRY AND THE CRYSTALLOGRAPHIC DIRECTION OF GROWTH ON THE DISLOCATION STRUCTURE OF SINGLE CALCIUM ARSENIDE CRYSTALS

Article by S. P. Grishina, M. G. Mit'sinskaya, V. B. Osven'skiy, V. F. Pavlov, V. G. Ponomarev, Novosibirsk, III Sbornik po Problematike Kvantovoi i Atomnoi Fiziki, Novosibirsk, 1971, p. 201

It was demonstrated that during the growth from a melt, the deviation of the composition from the stoichiometry can have an effect on the dislocation structure of calcium arsenide single crystals both through the crystallization process and by creating additional dislocation sources in the material which has already been crystallized. In the first case the deviation of the composition of the melt from stoichiometry can lead to destruction of the stability of the smooth crystallization front under the conditions of concentration supercooling which is expressed in the formation of the low-angle boundaries and the cellular structure. This effect is exhibited most clearly when growing a crystal in the [100] direction and with a small magnitude of the axial temperature gradient at the crystallization front. In the second case the deviation of the composition from stoichiometry has an effect on the formation of the dislocations in the crystal under the effect of thermal stresses. It was established that the deviation from stoichiometry in the direction of excess arsenic in the surface layers of the crystal leads to more intense generation of the dislocations where the deviation in the direction of the excess arsenic has the opposite effect by comparison with the stoichiometric composition. For growth under conditions of identical stoichiometry of the melt, a noticeable effect of the growth direction on the dislocation density in the crystal was not observed. This is confirmed by the results of calculating the thermal stress field. Using the x-ray diffraction topography, a study was made of the types of dislocations in the single crystals prepared in various crystallographic directions.

USSR

UDC: 548.4

BELYATSKAYA, N. S., GRISHINA, S. P., LOPATIN, Ye. P., MIL'VIDSKIY, M. G., OSVENSKIY, V. B., FOMIN, V. G., State Scientific Research and Design Institute for the Rare Metals Industry

"Structural Singularities of Gallium Arsenide Single Crystals Heavily Doped With Donor Impurities"

Moscow, Kristallografiya, Vol 17, No 1, Jan/Feb 72, pp 158-165

Abstract: A study is made of the effect which tellurium, selenium, and sulfur doping has on the degree of perfectness of GaAs single crystals. Metallographic and radiographic studies show that doping to high concentrations with donor impurities ($n > 10^{18}/\text{cc}$) may lead to an appreciable reduction in the dislocation density and to a specific distribution in the volume of the GaAs single crystals due to strengthening of the material and intensification of the process of dislocation creep during doping. Nonhomogeneous dopant distribution in heavily doped single crystals is an additional source

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BELYATSKAYA, N. S. et al., Kristallografika, Jan/Feb 72, pp 158-165

of dislocations. Structural investigations show that in the process of growing gallium arsenide single crystals heavily doped with donor impurities, partial decomposition of supersaturated solid solutions takes place, accompanied by the development of additional internal stresses and a lumped structure within the crystal. Five figures, one table, bibliography of eleven titles.

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USSR

UDC 621.315.592

MIL'VIDSKIY, M. G., OSVENSKIY, V. B., PROSHKO, G. P., KHOLODNYI, L. P.

"Nature of Defects in Gallium Arsenide Strongly Alloyed with Tellurium"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 224-228

Abstract: A complex study was made of defects in single crystals of GaAs strongly alloyed with Te by joint measurement of the internal friction and the photoluminescence spectra in certain samples. The crystals were investigated both in the initial state after growth and after various types of heat treatment. In the grown GaAs crystals with carrier concentration $n < 5 \cdot 10^{18} \text{ cm}^{-3}$, one of the basic electrically inactive forms of occurrence of the Te atoms is the pairs TeV_{Ga} . With an increase in the Te concentration to $n \approx 8 \cdot 10^{18} \text{ cm}^{-3}$, more complex complexes of Te atoms with lattice defects are formed. Preliminary high-temperature quenching has a significant effect on the nature of the transformations taking place during subsequent annealing. The nature of the centers formed during heat treatment depends on the concentration of the alloying admixture in the crystal. The radiation band with a peak at ~ 1.2 electron volts in the photoluminescence spectrum of GaAs alloyed with Te is not connected with TeV_{Ga} pairs. The role of the centers of radiationless recombination can be

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MIL'VIDSKIY, M. G., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 224-228

played by gallium vacancies and complex complexes of Te atoms with lattice defects. Graphs are included showing the temperature dependence of the internal friction in single crystals of GaAs alloyed with Te and their photoluminescence spectra.

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OSVENSKIY, V.B.

RARE METALS

OSVENSKIY, V.B.

JPRS 54673

10 December 1971

A-6

EFFECT OF TEMPERATURE AND THERMAL STRESS FIELDS ON THE FORMATION
OF THE DISLOCATION STRUCTURE IN SINGLE CRYSTALS OF GALLIUM
ABSTRACTED FROM THE GEOPHYSICAL METHOD

Article by N. A. Ardenin, S. S. Vakhrameyev, M. G. Milyutskiy, V. B. Osvenskiy,
Corresponding Member of the USSR Academy of Sciences, B. A. Salnikov, V. V.
Salnikov, Yu. P. Shchekin, State Scientific Research and Planning and Design
Institute of the Kirov Metal Industry, Moscow, Doklady Akademiya Nauk SSSR, Nov-
sibir, Vol. 200, No. 2, 1971, unpublished, 30 April 1971, pp. 316-319.

Dislocations in single crystals grown from a melt are formed basically
under the effect of thermal stresses arising during cooling of the ingot during
the process of its growth. If these stresses exceed the critical shear of the
material at the corresponding temperature, they cause plastic flow which
partially or completely removes the thermal stresses. Consequently, the den-
sity distribution of the dislocations in the crystal must be determined by the
thermal stress field in the temperature range of the plastic material.

However, up to now analysis of the conditions of formation of the dis-
location structure of single crystals grown from a melt has reduced essentially
to establishment of the empirical relation of the dislocation density to the
magnitude of the temperature gradients in the vicinity of the crystallization
front. Here, the defining role was attributed either to the radial (1) or
the axial (2-4) components of the temperature gradient. The problem of the
volumetric stressed state in the crystal was not considered in these works as
a result of the great mathematical difficulties of solving it.

In this paper, a new approach to solving the problem has been used the
scheme of which consists in the fact that the temperature field is calcu-
lated on a computer considering the boundary conditions obtained experimentally
after which the thermoelastic stress field is calculated. The volumetric dis-
tribution of the thermoelastic shear stresses obtained in this way compare
with the corresponding values of the yield stresses for gallium arsenide de-
termined from independent experiments. This approach permits analysis of the
conditions of formation of dislocations in the crystal growth process.

Single crystals of gallium arsenide were grown from under a layer of
molten boron anhydride in the [111] direction. The temperature distribution
in the crystal was fixed by tungsten-rhenium thermocouples 0.2 mm in diameter.

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1/3 017 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--STRUCTURAL FEATURES OF SILICON SINGLE CRYSTALS STRONGLY DOPED WITH
ARSENIC -U-
AUTHOR--(04)-GRISHINA, S.P., KLIMOVA, N.M., OSYENSKIY, V.B., MILYIDSKIY,
M.G.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(2) 193-5
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, MATERIALS
TOPIC TAGS--SILICON SINGLE CRYSTAL, DOPED ALLOY, ARSENIC CONTAINING ALLOY,
SOLID SOLUTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1996/0821 STEP NO--UR/0363/70/006/002/0193/0195
CIRC ACCESSION NO--AP0118002
UNCLASSIFIED

2/3 017

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118002

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ELECTRONMICROSCOPE STUDY WAS MADE OF THE STRUCTURE OF SI SINGLE CRYSTALS DOPED WITH AS TO A CONC. OF 5 TIMES 10 PRIME20-CM PRIME3. THE CRYSTALS WERE GROWN BY THE CZOCHRALSKI TECHNIQUE IN THE MEAN VALUE OF 111 DIRECTION. THE SAMPLES WERE SECTIONED BOTH IN TRANSVERSE AND IN LONGITUDINAL CROSS SECTION, COINCIDING WITH THE (110) PLANE. ELECTRON REPLICATION AND THIN FILM ELECTRON TRANSMISSION TECHNIQUES WERE USED. FOUR SYSTEMS OF PARALLEL GROWTH BANDS WITH PERIODS OF SIMILAR TO 100, SIMILAR TO 40, SIMILAR TO 10, AND SIMILAR TO 2 MU WERE OBSERVED ON LONGITUDINAL SECTIONS. FINER BANDS, WITH PERIODS OF SMALLER THAN OR EQUAL TO 0.1 MU, WERE OBSD. INSIDE THE SIMILAR TO 2 MU BANDS. THE PRESENCE OF PERIODIC HETEROGENEITY IN CRYSTALS IS GNERALLY ASSOCD. WITH PERIODIC CHANGE OF GROWTH RATE. THE PRESENCE IN THE CRYSTALS OF A WHOLE SPECTRUM OF FINE GROWTH BANDS ATTESTS TO THE COMPLEXITY OF THE PROCESSES TAKING PLACE AT THE CRYSTN. FRONT. IN THE MIDDLE PART OF THE CRYSTALS THERE IS A "GATHERING" OF FINE GROWTH BANDS INTO WINDER ONES. A DISCRETE STRUCTURE OF THE CELLS WAS OBSD. IN THE SAMPLES ALONG WITH THE GROWTH BANDS. THE BOUNDARIES OF THE CELLS LOOK LIKE THIN GROOVES (SIMILAR TO 4 MU), INTERSECTING THE GROWTH BANDS IN THE MEAN VALUE OF 110 DIRECTIONS. PPTS. MEASURING SIMILAR TO 10 PRIME3 ANGSTRUM IN SIZE WERE OBSD., INTO THE COMPN. OF WHICH ENTERS THE DOPING IMPURITY. THE MOST PROBABLE REASON FOR THE FORMATION OF SUCH FINELY DISPERSED PPTS. IS THE PARTIAL DECOMPN. OF THE SOLID SOLN. OF AS AND SI DURING COOLING OF THE CRYSTAL FROM THE M.P.

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3/3 017
CIRC ACCESSION NO--AP0118002

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--THERE ARE NO DATA IN THE LITERATURE ON THE SOLY. OF AS
IN SI WITHIN A WIDE TEMP. RANGE.

UNCLASSIFIED

1/3 031 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--EFFECT OF IMPURITIES OF GROUP IV ELEMENTS ON THE PLASTIC PROPERTIES
OF GALLIUM ARSENIDE -U-
AUTHOR--(03)-SHERSHAKOVA, I.N., OSVENSKIY, V.B., STOLYAROV, O.G.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(3), 457-60
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--GALLIUM ARSENIDE, PLASTICITY, SEMICONDUCTOR MATERIAL, CRYSTAL
DISLOCATION, TIN, GERMANIUM, SINGLE CRYSTAL, CRYSTAL IMPURITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0927 STEP NO--UR/0363/70/006/003/0457/0460
CIRC ACCESSION NO--AP0118094
UNCLASSIFIED

2/3 031
CIRC ACCESSION NO--AP0118094

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STUDY OF THE INFLUENCE OF IMPURITIES ON PLASTIC PROPERTIES OF SEMICONDUCTOR MATERIALS PROVIDES SUCH QUANT. CHARACTERISTICS AS THE ACTIVATION ENERGY OF THE DISLOCATION MOTION AND KINETIC CONSTS., AND IT MAKES IT POSSIBLE TO UNDERSTAND THE MECHANISM OF THE FORMATION OF DISLOCATION STRUCTURE AND THE INTERACTION OF POINT DEFECTS WITH DISLOCATIONS IN SEMICONDUCTORS. AMONG SUCH IMPURITIES IN THE EFFECT OF SN, GE, AND SI ON GAAS WAS STUDIED. THE DYNAMIC UNIAXIAL COMPRESSION METHOD WAS USED TO STUDY THE PLASTICITY OF THESE CRYSTALS. ACCORDING TO THE THEORY, IMPURITIES OF GROUP IV CAN REPLACE EITHER THE GA OR THE AS ATOM IN THE CRYSTAL LATTICE, OR BOTH SIMULTANEOUSLY. IN THE LATTER CASE, MOST OF THE DOPING IMPURITY DOES NOT CONTRIBUTE TO CARRIER CONC. UP TO A CONC. OF 1 TIMES 10 PRIME17 CM PRIME NEGATIVE3 ALMOST ALL THE SI ATOMS ARE DONORS; THEREAFTER, THIS DEPENDENCE CHANGES SIGNIFICANTLY, SINCE THE FERMI LEVEL RISES AND THE SUBSTITUTION OF ATOMS OF BOTH SUBLATTICES BEGINS. THE NATURE OF THE SUBSTITUTION DEPENDS ON WHETHER THERE IS EXCESS GA OR AS. THE PRESENCE IN GAAS OF EXCESS CATION (GA) VACANCIES ENHANCES THE DONOR CHARACTER OF THE SUBSTITUTION. THE ACCEPTOR BEHAVIOR OF THESE IMPURITIES CAN BE CAUSED BY AN EXCESS OF ANION VACANCIES. ALL THE IMPURITIES INVESTIGATED RAISE THE UPPER YIELD POINT FOR GAAS. THE UPPER YIELD POINT FOR UNDOPE GAAS AT THE EXPTL. CONDITIONS SELECTED WAS 6.2 KG-MM2, WHEREAS THAT FOR GAAS DOPED WITH GE WAS 17 KG-MM PRIME2. THE TEMP. AND RATE DEPENDENCES OF THE UPPER YIELD POINT FOR GAAS SINGLE CRYSTALS DOPED WITH GE AND SN WERE ALSO STUDIED.

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UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118094

ABSTRACT/EXTRACT--THE INCREASE IN THE ACTIVATION ENERGY FOR THE
DISLOCATION MOTION UPON DOPING OF GAAS BY AMPHOTERIC IMPURITIES CAN BE
EXPLAINED ON THE BASIS OF THE SIMULTANECUS ACTION OF SEVERAL FACTORS.
THE CHARGE STATE OF THE DOPANTS HAS A SIGNIFICANT EFFECT ON THE
PLASTICITY OF GAAS SINGLE CRYSTALS.

UNCLASSIFIED

1/2 031 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--HEAT TREATMENT TRANSFORMATIONS IN GALLIUM ARSENIDE STRONGLY DOPED
WITH TELLURIUM -U-
AUTHOR-(04)-GRISHINA, S.P., MILVIDSKIY, M.G., OSVENSKIY, V.B., FISTUL,
V.I.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 294-8
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--METAL HEAT TREATMENT, GALLIUM ARSENIDE, DOPED ALLOY,
TELLURIUM, HALL CONSTANT, CRYSTAL DISLOCATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1995/0940 STEP NO--UR/0449/70/004/002/0294/0298
CIRC ACCESSION NO--AP0116448
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116448

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TE DOPED GAAS SINGLE CRYSTALS DOPED WITH SUFFICIENT TE TO GIVE A CHARGE CARRIER CONC. OF (7-10) TIMES 10 PRIME18-CM PRIME3 AND DISLOCATION D. SIMILAR TO 10 PRIME3-CM PRIME2 WERE GROWN BY THE CZOCHRALSKI METHOD. THE HEAT TREATMENT WAS CARRIED OUT IN EVACUATED QUARTZ AMPULS. THE CARRIER D. AND MOBILITY WERE DETD. FROM HALL COEFF. AND COND. MEASUREMENTS OF CROSS SHAPED SAMPLES. ANNEALING WAS PERFORMED AT 700-1000DEGREES AFTER TEMPERING AT 1100DEGREES. FOLLOWING THE TEMPERING PROCEDURE ALL SAMPLES SHOWED AN 40-60PERCENT INCREASE OF ELECTRON CONC. A GENERAL DECAY OF N SUBE IS OBSERVED THROUGHOUT THE ENTIRE ANNEALING PROCESS (SIMILAR TO 100-150 HRS.) AT EACH ANNEALING TEMP. THE INITIAL N SUBE VALUE PRIOR TO TEMPERING IS REACHED WITHIN 20 MIN DURING THE ANNEALING PROCESS REGARDLESS OF TEMP. AT HIGHER COOLING RATES AS THOSE MET UNDER USUAL CRYSTN. CONDITIONS THE IMPURITIES REDISTRIBUTION CANNOT PROCEED, AND THE CRYSTAL REMAINS IN A METASTABLE STATE. THE DECAY OF N SUBE DURING ANNEALING IS ATTRIBUTED TO A TRANSITION OF PART OF THE TE ATOMS INTO INTERSTITIAL POSITIONS OR TO AN INCLUSION INTO A SECOND PHASE. A DECREASE IN ELECTRON MOBILITY IS CAUSED BY THE ANNEALING PROCESS. IT IS ASSUMED THAT TE ATOMS IN THE SECOND PHASE FORM MULTICHARGE COMPLEXES. UNDER ISOTHERMAL CONDITIONS AT GREATER THAN 800DEGREESC THE TRANSFORMATION PROCEEDS IN 2 STAGES. DURING THE FIRST 20 MIN A METASTABLE TE COMPLEX IS FORMED, WHICH IS THEN DISSOLVED AND A SECOND COMPLEX APPEARS, EVENTUALLY WITH THE FORMATION OF A FINELY DISPERSED SECOND PHASE. FACILITY: GOS. NAUCH.-ISSLED. PROENT. INST. REUKOMETAL. PROM., MOSCOW, USSR.

IMP) ACCEPTEA

USSR

UDC: 546.28:548.55

GRISHINA, S. P., KLIMOVA, N. M., OSVENSKIY, V. B., and MIL'VIDSKIY, M. G.,
Giredmet (State Scientific Research and Planning Institute of the Rare Metals
Industry)

"Structural Features of Silicon Single Crystals Highly Doped with Arsenic"

Moscow, Neorganicheskiye Materialy, Vol 6, No 2, Feb 70, pp 193-195

Abstract: An electron microscopy study of arsenic-doped silicon crystals, grown by the Chokhralski method, revealed growth zones with a period of up to 1 micron. A study with the replica method established that the cell and growth zones have a discrete structure. Segregations measuring $\sim 10^3 \text{ \AA}$ containing the alloying addition were detected. The partial decomposition of the solid solution of arsenic in silicon, during the cooling of the crystal from its melting temperature, may be responsible for the formation of such finely dispersed segregations. There is a lack of information, however, in the literature on arsenic solubility in silicon over a wide temperature range; the appreciable stability of the segregations with respect to thermal effects cautions against unvalued views regarding their nature. Further studies are essential.

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USSR

UDC 548.4

BUBLIK, V. T., KARATAYEV, V. V., KULAGIN, R. S., MIL'VIDSKIY, M. G.,
OSVENSKIY, V. B., STOLYAROV, O. G., KHOLODNIY, L. P., State Scientific-Research
and Design Institute of the Rare Metals Industry

"Nature of Point Defects in GaAs Single Crystals as a Function of Composition
of Melt Used in Growing Them"

Moscow, Kristallografiya, Vol 18, No 2, Mar-Apr 73, pp 353-356.

Abstract: The dependence is studied between the nature and concentration of point defects in GaAs monocrystals and the composition of the growth melt. During the studies, the density of specimens was determined with high precision, lattice periods and internal friction were measured. The results produced indicate that single-phase GaAs crystals can be grown from melts containing between 46.7 and 53.5 at. % As, crystals of stoichiometric composition being produced from a melt rich in As, with its concentration in the melt 50.5 at. %.

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USSR

UDC 621.822.002.3:621.762

YAS', D. S., OSVETIMSKIY, L. A., DYADENKO, N. S., ZAPOROZHETS, A. A., and
BELENTSOVA, N. A., Ukrainian Scientific Research Institute of the Textile
Industry

"Copper-Graphite Materials with Additives of Graphite Granules Plated with
Copper"

Kiev, Poroshkovaya metallurgiya, No 5, May 71, pp 70-75

Abstract: A new method for improving the antifriction properties of materials intended for operation under conditions of dry friction, for manufacturing sliding contacts and low-load sliding bearings, developed at the metal ceramics laboratory of the Ukrainian Scientific Research Institute of the Textile Industry was applied to obtain metal ceramic of copper-graphite material with additives of graphite granules plated with copper. The results, presented in graphs and photographs of microstructure of copper-graphite materials with various graphite content, show that the addition of copper-plated graphite reduces the material electric conductivity and increases its compression strength, and with 6% content the hardness and bending strength increase. Thus, for a material with 15 wt% content of plated graphite, hardness and compression and bending strength increase by 30, 80, and 100%, respectively, while 1/2

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YAS', D. S., et al., Poroshkovaya metallurgiya, No 5, May 71, pp. 70-75

the specific electric resistance and the dry friction coefficient decrease by 60 and 27%, respectively, in comparison with the same material with exposed graphite.

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USSR

UDC: 536.46:533.6

OSVETINSKIY, S.A., KICHIN, YU.S. and BAKHMAN, N.N.

"Combustion of Solid Fuel in Gas Oxidizer Flow"

Odessa, 11-ya Vses. Konf. po Vopr. Ispareniya, Goreniya i Gaz. Dinamiki Dispersn. Sistem, 1972 (11-th All-Union Conference on Problems of Evaporation, Combustion and Gas Dynamics of Dispersion Systems, 1972), 1972, p 40 (from Referativnyy Zhurnal-Mekhanika, 1973, Abstract No 2B980)

Translation: Combustion of polymethyl-metacrylate with additions of urotropin, hexyl and copper needles in flow of oxygen was investigated. Tests were conducted with cylindrical specimens of $d_H = 8$ mm original inside diameter, 70 mm length made by compacting the mixture polymethylmetacrylate powder with additions. The oxidizer flow density ρv varied from 10 to 40 gr/cm² sec. The combustion chamber pressure was 5-70 atm.

It is shown that by adding hexyl and copper needles to the fuel it is possible to control the effect of pressure and oxidizer flow density on the speed of gasification.

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USSR

UDC 629.7.036.54-66:536.46

OSVETINSKIY, S. A., KICHIN, YU. S., and BAKHMAN, N. N.

"The Combustion of a Solid Fuel in a Stream of Gaseous Oxidant"

Odessa, 11-ya Vses. Konf. po Vopr. Ispareniya, Goreniya i Gaz. Dinamiki Dispersn. Sistem, 1972 -- Sbornik (11-th All-Union Conference on Problems of the Evaporation, Combustion, and Gas Dynamics of Dispersed Systems, 1972 -- Collection of Works), 1972, p 40 (from Referativnyy Zhurnal -- Aviatsonnyye i Raketnyye Dvigateli, No 1, 1973, Abstract No 1.34.144 Resume)

Translation: A study was made of the combustion of polymethylmethacrylate (PMMA) with additives of urotropine, hexogen, and copper needles in a stream of gaseous oxygen. The experiments were conducted on cylindrical specimens with an initial internal diameter of $d_H = 8$ mm and a length of about 70 mm, obtained by pressing mixtures of powdered PMMA with the additives. The flow density of the oxidant (pv) varied from 20 g/cm² sec to 40 g/cm² sec. The pressure in the combustion chamber was 5 -- 70 physical atmospheres. It was shown that by means of the introduction of hexogen and copper needles into the fuel as additives, it is possible effectively to change the relationship of the gasification rate to the pressure and density of the oxidant flow.

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USSR

UDC 621.791.052:669.
.715:539.319

STOLBOV, V. I., Candidate of Technical Sciences, and
OSYANKIN, G. V., Engineer, Tolyatti Polytechnic Institute

"Influence of Assembly Stresses in Edges on Displacements and
Residual Stresses When Welding Sheets of Aluminum Alloys"

Moscow, Svarochnoye Proizvodstvo, No 1(471), Jan 74, pp 13-15

Abstract: The joining of thin aluminum sheets by the lap welding method is recommended in order to eliminate stability losses in welding and to secure the production of an ordinary butt weld when melting the lap joint. The character of edge displacement, depending on the parameters of butt building with the lap joint, was analytically investigated on the basis of the change in potential energy of the system in welding 2-mm-thick joints of AMg6 alloy. The residual longitudinal stresses in welding with the meltable lap joint were 25-30% lower than in resistance butt welding. The derived analytical dependences were experimentally proved on 150 x 300-mm specimens, 0.8-2 mm thick, of AMg6, AMg6P, and ADON alloys which were three-phase arc-welded with non-melting electrodes. A satisfactory convergence of calculated and experimental data was found. Six figures, 11 formulas, six bibliographic references.

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USSR

UDC 621.791:62-413:699.71

STOLBOV, V. I., Candidate of Engineering Sciences, and OSYANKIN, G. V.,
Engineer, Tol'yattinsk Polytechnic Institute

"High-Speed Welding of Thin Aluminum-Alloy Sheet"

Moscow, Svarochnoye Proizvodstvo, No 3, Mar 73, pp 14-16

Abstract: The technology is described for welding aluminum alloys D16T, AMg6 and others at high rates (up to 130-200 m/hr) for sheet thicknesses of 3-0.5 mm without the formation of cracks. In tests of welded samples for static tension it was established that alloys of the magnalium type fail primarily in the fusion zone from the side of the top sheet (for lap joints) and alloys of the ADON and AMtsP types fail in the base material from the side of the bottom sheet at a distance of 5-7 mm from the fusion zone. In all cases the strength of the joints was close to the base-metal strength. Industrial testing of the developed technology were made on pipe (200 mm in diameter and 1400 mm long with a 2-mm wall thickness) from alloy AMg6. For this purpose an USPSH unit was designed and produced with a single-sided edge clamp and a mechanism for torch movement which provided a welding rate up to 180-200 m/hr. The use of this technology made it possible to lower costs for the production of 1 m of seam by almost three times due to

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USSR

STOLBOV, V. I., and OSYANKIN, G. V., Svarochnoye Proizvodstvo, No 3, Mar 73, pp 14-16

simplification of the preparation and assembly of the rims for welding, increasing welding rate, and eliminating the necessity of straightening a part and correcting defects. 7 figures, 4 bibliographic references.

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USSR

UDC: 517.9:532

OSVYANNIKOV, L. V.

"On the Rise of a Bubble"

V sb. Nekotor. probl. mat. i mekh. (Some Problems of Mathematics and Mechanics--collection of works), Leningrad, "Nauka", 1970, pp 209-222 (from RZh-Matematika, No 5, May 71, Abstract No 5B498)

Translation: The author considers the problem of motion of a heavy, ideal, incompressible fluid which is at rest at the initial time $t = 0$, occupying the half-space $z < 0$ with a spherical cavity in it $(x^2 + y^2 + (z+H)^2 < R^2, H > R)$ filled with gas. It is assumed that the gas pressure in the cavity is $p_r(t) = \text{const}[Q(t)]^{-\gamma}, \gamma > 1$; $Q(t)$ is the volume of the cavity. The pressure of the liquid on the free surface $S(t)$ and at the boundary of the cavity $\Gamma(t)$ is equal respectively to $p_{am} = \text{const}$ and $p_r(t)$. The problem reduces to finding the harmonic potential of velocity $\phi(\bar{x}, t)$ in the variable region $\Omega(t)$ bounded by $S(t)$ and $\Gamma(t)$, which are unknown beforehand. The kinematic condition should be satisfied on $S(t)$ and $\Gamma(t)$. It is further assumed that $S(t)$ asymptotically approaches the plane $z = 0$ as $|\bar{x}| \rightarrow \infty$. After the introduction of dimensionless quantities and the lagrangian variables $t, \bar{\xi}(\xi, \eta, \zeta)$, whose

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OSVYANNIKOV, L. V., Nekot. probl. mat. i mekh., Leningrad, "Nauka", 1970, pp 209-222

domain Ω is constant in time, the problem is formulated for the radius-vector of a liquid particle $\bar{x}(t, \bar{\xi})$ and the potential of velocity $\phi(t, \bar{\xi})$ in Ω :

$\Delta_{\bar{\xi}} \phi = \text{div}_{\bar{\xi}} \bar{V}$, $\phi \rightarrow 0$ ($|\bar{\xi}| \rightarrow \infty$), $\bar{V} = (M^* - M^{-1}) \bar{x}_t$, $\bar{x}_t = M^{*-1} \nabla_{\bar{\xi}} \phi$; on S : $\phi_t = \frac{1}{2} |\bar{x}_t|^2 - z$; on Γ : $\phi_t = \frac{1}{2} |\bar{x}_t|^2 - z + \beta + \alpha q(t)$; when $t = 0$: $\bar{x} = \bar{\xi}$, $\phi = 0$. Here α, β are dimensionless parameters; $q(t)$ is a quantity related to the dimensionless volume of the cavity and expressed in terms of the quadrature of \bar{x} ; M is Jacobi's matrix

$M = \frac{D(\bar{x})}{D(\bar{\xi})}$. The author proves the theorem of existence (for small t) and unique-

ness and also the axial symmetry of the solution, which takes the form of power series in t , and constructs several first terms of such series. B. Rusanov.

USSR

UDC 612.014.42

VALYEYEV, U. S., OSYENNIY, O. S., TORNUYEV, YU. V., and RAKYTYANS'KYY, D. F.;
Institute of Physiology of the Siberian Branch of the Academy of Sciences USSR,
Novosibirsk

"The Origin of the External Electric Field Which Is Recorded Around Animals
and Man"

Kiev, Fiziologichnyy Zhurnal, Vol 19, No 1, 1973, pp 99-104

Abstract: Using very sensitive electric equipment, the electric field was recorded around man and animals at a distance of 1 m. The strength of the field increases linearly with the distance decrease between the recording equipment of the animal or human body. The configuration and amplitude of the external electric field differs over different parts of the body. When the air humidity was increased to 50-85%, no electric field was recorded even at a distance of 5 cm from the man's body. The best recordings were obtained at 20-25°C and air humidity of 17-35%. Rubbing of a man's body with a cloth or bare hand increases the electric field even in the presence of high air humidity (45%). In the case of furry animals, the recorded electric field changed synchronously with respiration cycles and heart beats. No electric field was recorded around frogs, even at a distance of 0.5 cm from the body. The electric field around

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USSR

VAYEV, U. S., et al., Fiziologichnyy Zhurnal, Vol 19, No 1, 1973, pp 99-104
animals and man depended on respiration and heart beats. The recorded electric
field is the result of the mechanical activities of living creatures and is
not related to any electrical processes that take place in the living organism.

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OSYENNYI, O.S.

EXTERNAL ELECTRIC FIELD RECORDED AROUND ANIMALS, MAN

[Article by U. S. VEIYEV, O. S. JANYON, Yu. V. TORUNEV, R. F. BAKLYAN, Institute of Physiology, Ukrainian Branch of the USSR Academy of Sciences, Novosibirsk, Kiev, Fiziol. Zhurn. Akad. Nauk Ukrainy, 1973, No 1, 1973, pp 99-104]

The attention of many researchers has been attracted recently by information regarding the presence of an electric field around an excited heart. The first report in 1949 [1] showed the existence of a magnetic field around a nerve [2, 3] and of electric and magnetic fields around the heart [4, 5]. Experimental results regarding the electric field around the heart [6, 7] showed that characteristic of the recorded electric field around the human heart at a distance of 1 m cannot be explained within the framework of our understanding of the heart as an electric field generator.

The aim of this work was to study the characteristics of the electric field which can be recorded around biological subjects and to explain its nature.

Methods

The method of recording the external electric field of biological subjects was developed on the assumption that the source of this field is the hypothetical electric dipole located in the volumetric conductor and which produces a difference in potentials that is equal to the QRS wave amplitude on an electrocardiogram.

In order to record the electric field of biological subjects, it is necessary to have very sensitive apparatus (10⁻³ to 10⁻⁴ V). In our experiments we used the electrometric amplifier UI-2 with the input resistance of 10¹¹ ohm which was necessary to satisfy the field source impedance and the recording device. The maximal sensitivity of the

JPRS: 56826
23 Apr. 1973

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23 April 1973

device between 0.5 Hz and 1 kHz was 10^{-3} V. In several instances, standard band filters were used at the input of the indicating device.

A comparatively high external interference produced by the earth's electric field, other functioning equipment, and the feed net-work required very strict screening of the subject under study. The screening chamber was in the shape of a cube, with 3-meter sides. During study was very important, because only in this case would it be possible to observe alternations in the recorded external electric field which originate due to the volumetric asymmetry of the subject with respect to the walls of the screening chamber. For the same reason, all subjects were placed approximately in the center of the chamber in a horizontal position.

Three remote electrometer units of three amplifiers were suspended with special stretchers (suspensions) from the chamber ceiling at different distances from the heart of the subject investigated. This made it possible to record the electric field at three points simultaneously. In addition, it was made possible to record the XEC synchronously with the recording of the electric field. All measuring devices were placed outside the chamber, with the exception of the remote units of the amplifiers and the electric field sensors. Leads for the contacts XEC were shielded and the shields were grounded.

Metal discs 25 mm in diameter served as field sensors, and they were attached to input terminals (terminals) of the electrometer units. Each disc was surrounded by a protective ring which was connected through a resistance with the case of the remote unit. The distance of this ring was equal to the time constant of the input of the electrometer with the electric field sensor. The disc plate facing the subject was considered to be the working surface.

The humidity of the surrounding air was recorded simultaneously with the electric field.

The amplifying line was calibrated by placing the field sensor between two plane-parallel plates to which was applied the calibrating pulses, the shape of which resembled that of the field signal.

Frogs, cats, and people were the subjects of study. The electric field was recorded when the subject was grounded, and when there was no contact between the subject and the surrounding leads or the ground. In the second case the XEC was not taken. Figure 1 shows a schematic diagram of the recording unit.

USSR

UDC: 532

OSYPENKO, V. P., STETS'KIV, O. P., PANASYUK, P. V.

"Thermoelectromotive Force of Alloys in the Indium-Zinc System in the Molten State and on the Crystal-Melt Interface"

Visnyk L'viv. un-tu. ser. fiz. (L'viv University Herald. Physics Series), 1971, vyp. 6(14), pp 60-63, 110 (from RZh-Fizika, No 6, Jun 72, Abstract No 6Ye161)

Translation: An investigation is made of the thermoelectromotive force of alloys in the In-Zn system in the melting region and in the molten state. It is found that alloys with a high percent concentration of zinc have positive thermoelectromotive force, while indium-rich alloys have negative thermo-emf. Authors' abstract.

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USSR

Infrared Rays

UDC: 621.384.2

GREKHOV, I. V., LEVINSHTEYN, M. Ye., L'VOVA, T. V., OTBLESK, A. Ye.
and SERBIN, A. I., A. F. Ioffe Physico-Technical Institute, Lenin-
grad

"Silicon Injection Modulator of Infrared Radiation"

Leningrad, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp
1327-1334

Abstract: This paper describes experiments for investigating silicon injection modulators and discusses methods for computing injection modulators operating in the pulse mode. The experimental equipment uses a CO₂ laser of the OKG-15 type, with a wavelength of 10.6 μ , the beam incident on the face of the silicon specimen. The transmitted beam falls on a photosensitive device, and the signal from the latter is applied to a microvoltmeter of the V6-2 type, in the d-c mode, or to a pulse amplifier and thence to an oscillograph, in the pulse mode. Rectangular pulses are applied to the specimen. A block diagram of the apparatus and an explanation of the experimental procedures are given. Curves are plotted for the modulation coefficient as a function of the d-c current density in different types of specimens under various conditions,
1/2

USSR

UDC: 621.382.2

GREKHOV, I. V., et al, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp 1327-1334

the coefficient being calculated from the formula $K = (I_0 - I_J)/I_0$, where I_0 is the signal recorded by the microvoltmeter with no current, and I_J is the signal for a specified current density. It is found that the rate of growth of the coefficient with time is not determined by the reactances in the circuit but by the modulation of the resistance in the diode specimen base through the injected carriers. In the theory section of this paper, the results of the experiments are discussed on the basis of a model according to which the current through the diode remains constant during the time of the pulse.

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USSR

UDC 620.194

SHEVELYA, V. V., OTBLESK, B. Ye., Kiev Institute of Civil Aviation Engineering

"Inelastic Phenomena in Metal Fatigue"

Kiev, Fiziko-khimicheskaya Mekhanika Materialov, Vol 8, No 3, 1972, pp 7-12.

Abstract: This work presents the results of a study of the changes in internal friction in copper and low-carbon steel under cyclical loading. An inverse relationship was found between the level of cyclical stress and the maximum of internal friction. Internal friction during cyclical loading of copper is compared with the Young modulus and microhardness. The maximum of Young modulus and microhardness match the minimum of internal friction, when the dislocation density reaches a critical value. This is followed by a reduction in modulus and microhardness plus an increase in internal friction, indicating disintegration of the material. The changes in internal friction for steel are slightly different, resulting from the peculiarities of deformation of BCC metals. The changes in Young modulus and microhardness, however, are the same as for copper, with their maximum values occurring at the second maximum of internal friction (for moderate stresses). It is concluded that the changes in internal friction and microhardness are related to the dislocation density. It is concluded that the changes in internal friction and microhardness are related to the dislocation density.

USSR

SHEVELYA, V. V., OTBLESK, B. Ye., Kiev, Fiziko-khimicheskaya Mekhanika Materialov, Vol 8, No 3, 1972, pp 7-12.

cluded that this sort of combined study of internal friction characteristics in the kilohertz frequency range can reveal the changes occurring in the fine crystalline structure during metal fatigue.

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USSR

UDC 631.542.25

BAR'YETAS, P. K., ~~OTEMISOV, T.~~, Institute of Experimental Plant Biology of the
Uzbek SSR Academy of Sciences

"Penetration of Defoliants into Cotton Seed"

Moscow, Khimiya v sel'skom Khozyaystva, No 8, 1972, pp 43-46

Abstract: A study was made of the residual amounts of defoliants in cotton seed. Magnesium chlorate and butylcaptax, defoliants with a contact action, penetrate into the kernel of the cotton seed. The penetration rate of these compounds depends on the physiological state (age) of the bolls and also on the dosage of the compound and the air temperature. During manifestation of protective properties of the plant, the quantity of defoliants in the seeds gradually drops apparently as a result of its detoxication. Detoxication is accelerated at high temperatures. Butylcaptax was detected in the cotton seed kernels primarily in metabolized form. About 5-10% of the radioactivity of a ^{35}S tag was in the aliphatic fraction (ether extract) -- a lipophilic product of conversion of butylcaptax. The primary radioactivity (90-95%) was distributed among the remaining three fractions of the kernels: water-soluble metabolites (35-40%), water soluble proteins (20%) and dry solid residue (30-35%). In the experiments magnesium chlorate [$\text{Mg}(\text{ClO}_3)_2 \cdot 6\text{H}_2\text{O}$] was used in the

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USSR

BAR'YETAS, P. K. and OTEMISOV, T., Khimiya v sel'skom Khozyaystva, No 8, 1972,
pp 43-46

amounts of 12 and 30 kg/hectare, and butylcaptax (2-butylthiobenzothiazol)
was used in the amount of 10 kg/hectare.

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USSR

UDC: 546.799:539.1.074.5

FLEROV, G. N., PERELYGIN, V. P., and OTGONSUREN, O.

"The Origin of Fission Fragment Traces in Lead Glass"

Moscow, Atomnaya Energiya, vol 33, No 6, 1972, Abstract, p 974

Translation: An investigation is made of the origin of fission fragment traces detected during the chemical etching of old lead glass. By using the method of recording rare events of nuclear fission, the authors established from the coincidence of the traces in two layers of polymer film that the effect observed earlier in two lead glass specimens is explained by the fission of the lead nuclei by cosmic radiation if it is assumed that these glasses are in containers covered with concrete no greater than 10 cm thick. The probability of the fission of the lead by these particles at sea level with no absorbers is found to be 15 ± 4 fissions per gram per year ($\lambda = 56^\circ$ N. Lat.).

Investigation of the sensitivity of the glass to heavy Ne^{22} , S^{32} , Cl^{35} , Ar^{40} , and Zn^{66} ions allowed the conclusion that in glass without impurities of elements heavier than tungsten, cosmic radiation does not lead to the appearance of background traces. In connection with the fact that the conditions for preservation of the investigated glass are not known, the result obtained earlier with lead glass is only an indirect indication of the existence in nature of long-lived, spontaneously fissioning nuclides. (Four illustrations, 20 bibliographic titles.)

USSR

UDC: 681.3.519.2

OTKHMEZURI, G. L., GOGIBERIDZE, A. Sh., GURULI, V. V., ZUBIASHVILI, Sh. M.,
SIRADZE, Sh. M., SIGUA, V. F., DATUASHVILI, A. N., Tbilisi Affiliate of
the All-Union Scientific Research Institute of Metrology ineni D. I.
Mendeleyev

"A Device for Determining the Mathematical Expectation of Random Processes"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 48, Dec 73, Author's Certificate No 409244, Division G, filed 4 May 72,
published 30 Nov 73, pp 120-121

Translation: This Author's Certificate introduces a device for determining
the mathematical expectation of random processes. The device contains a
pulse generator, source of input information, an amplifier, diodes, a rec-
tifier, and a shifter. The pulse generator is connected to a modulator
directly and to the first input of an interrupter through an accumulator.
The source of input information is connected to the modulator through a
comparison circuit. The shifter is connected through a multiplier to the
output of the device. As a distinguishing feature of the patent, the working
precision of the device is improved by adding magnetic accumulator elements.

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USSR

OTKHMEZURI, G. L. et al., USSR Author's Certificate No 409244

The inputs of these accumulator elements are connected to the corresponding diodes, and the diode inputs are connected to the output of the interruptor. The output of the rectifier is connected to the shifter and to the comparison circuit. The modulator output is connected through the amplifier to a second input of the interruptor.

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USSR

UDC 632.951:634.3

OTKHMEZURI, L. T., Georgian Scientific Research Institute of Plant Protection

"The Action of a Mixture of Organophosphorus Compounds on Citrus Pests"

Moscow, Khimiya, v Sel'skom Khozyaystve, Vol 10, No 9 (119), 1973, pp 35-37

Abstract: The activity of the mixtures of organophosphorus compounds depends on their composition and on the pests. Synergistic effect was noted for a 1:1 mixture of methathione, cyanox, benzophosphate or halecrone with phosphamide in tests carried out on *Pannonychus citri* McGreg. The duration of the activity of these mixtures was also extended. In experiments on *Ceroplastes japonicus* Green and *Pseudococcus maritimus* Ehch the 1:1 mixtures of phosphamide with methathione, cydial or cyanox were weakly synergistic, but phosphamide mixed with cydial (1:2 or 2:1) or with benzophosphate (1:2) acted antagonistically. Against *Coccus hesperidum* L. phosphamide mixed with methathione or DDVP (1:1) showed an additive effect.

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USSR

UDC: 51:801

IL'IN, G. M., LEYKINA, B. M., NIKITINA, T. N., OTKUPSHCHIKOVA, M. I.,
FITIALOV, S. Ya.

"A Linguistic Approach to the Problem of Constructing an Information System"

V sb. Inform. vopr. semiotiki, lingvist. i avtomat. perevoda (Information
Problems of Semiotics, Linguistics and Automatic Translation), vyp. 2,
Moscow, 1971, pp 4-13 (from RZh-Kibernetika, No 4, Apr 72, Abstract No
4V614)

Translation: The paper describes the principles of construction of a
"question-answer" information-logic system. It is assumed that a natural
language can be used as a base for an information language. The actions
of the system are defined by the following relations: 1) text A is an
answer to question Q; 2) an answer to question Q may be extracted from
text A; 3) every answer extracted from text B is extracted from text A
as well; 4) texts A and B give identical answers to any question.
The methods of extracting an answer from the text are not considered
in the paper.

Let $3(T)$ designate the number of questions whose answers can be ex-
tracted from text T according to the rules of the given system. The sense

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USSR

IL'IN, G. M. et al., Inform. vopr. semiotiki, lingvist. i avtomat. perevoda,
vyp. 2, Moscow, 1971, pp 4-13

of text T_1 relative to text T_2 is determined by the condition $3(T_1) + 3(T_2) <$
 $< 3(T_1 \cup T_2)$. The amount of information contained in T_1 relative to T_2 can
be defined as $3(T_1 \cup T_2) - 3(T_2)$. A. Maslov.

1/2 013
UNCLASSIFIED
TITLE--DETERMINATION OF CALCIUM IN MAGNETIC ALLOYS -U-
PROCESSING DATE--23OCT70
AUTHOR--(04)-CHASHCHINA, O.V., SLEZKO, N.I., OTMAKHOVA, Z.I., ZARUBINA,
R.F.
COUNTRY OF INFO--USSR
SOURCE--ZAVOD. LAB. 1970, 36(2), 180-1
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--MAGNETIC ALLOY, CALCIUM, METAL CHEMICAL ANALYSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1996/1883
CIRC ACCESSION NO--AP0118845
STEP NO--UR/0032/70/036/002/0180/0181
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118845

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A 0.25-G SAMPLE OF ALLOY CONTG. 0.9-0.003PERCENT CA WAS DISSOLVED IN 5 ML 4N HNO SUB3. THE SOLN. WAS EVAPD. TO A SYRUPY CONSISTENCY AND, AFTER ADDN. OF 20 ML 10N HCL, IT WAS PASSED THROUGH 11 G OF ANION EXCHANGER AB-17-8 IN THE CL PRIME NEGATIVE FORM. IN THIS WAY FE, CU, AND CO WERE SEPD. AND CA WAS DETD. IN SOLN. IN THE PRESENCE OF AL 8, TI 0.5, AND NI 14PERCENT BY EMISSION SPECTROGRAPHY.

FACILITY: TOMSK. GOS. UNIV. IM. KUIBYSHEVA, TOMSK, USSR.

UNCLASSIFIED

1/2 012
UNCLASSIFIED
TITLE--APPLICATION OF COLORLESS LACQUERS ON SMALL BRASS ARTICLES -U-
PROCESSING DATE--04DEC70
AUTHOR--(04)-GOLUBITSKAYA, M.L., TYULENEVA, N.N., OTOPKOV, G.M., PODGAINYY,
I.M.
COUNTRY OF INFO--USSR
SOURCE--LAKOKRASOCH. MATER. IKH PRIMEN. 1970, (2), 51-3
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--LACQUER, BRASS, PHENOLIC RESIN, ALKYD RESIN, EPOXY RESIN,
MELAMINE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605012/D09 STEP NO--UR/0303/70/000/002/0051/0053

ACCESSION NO--AP0140298

2/2 012

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140298

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SMALL BRASS ARTICLES (BUCKLES, HASPS, KNOBS, HINGES, ETC.) ARE USUALLY LACQUERED BY HAND OR IN A ROTATING DRUM, AND THE COATING IN A DRUM IS SATISFACTORY PROVIDED SIMILAR TO 1 G LACQUER IS USED FOR 100 G ARTICLES, THE ROTATION IS 15 RPM AND THE TIME OF RESIDENCE 5-7 MIN. A CENTRIFUGE IS DESCRIBED WHICH GIVES MUCH HIGHER PRODUCTION RATES (LESS THAN OR EQUAL TO 10,000 ARTICLES-HR), ECONOMY, AND BETTER COATING UNIFORMITY. THE LACQUERS USED ARE BASED ON PHENOLIC ALKYD EPOXY RESINS, ACRYLIC RESINS, OR MELAMINE ALKYD RESINS.

UNCLASSIFIED

USSR

UDC 521.4:[629.76+629.78]

MAMOTKO, Z. N., OTPUKCHENKO, A. Z., SHATROVSKIY, L. I.

"Certain Applications of the Numerical Solution of Variational Problems in Flight Dynamics"

V sb. Mat. metody modelir. v kosmich. issled. (Mathematical Methods of Modeling in Space Research. -- Collection of Works), Moscow, "Nauka", 1971, pp 158-176 (from RZh-62. Issledovaniye kosmicheskogo prostranstva, No. 4, Apr 72, Abstract No. 4.62.293)

Translation: A group of applications of the practical solution of variational problems by the method of improving controlling functions is presented. Among these applications are: replacement of the initial problem by the reciprocal problem; transformation of the type of bonds translating limitations in the region for the selection of phase coordinates of the system into restrictions on the region for the selection of the controlling functions; separation of the variational problem into subproblems and the so-called sliding interval method. The application of certain of these examples is illustrated in the problem of deriving the useful load to a circular orbit of maximum height. 15 ref. Resume.

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USSR

UDC 536.7+531.19:536.75

OTPUKCHENNIKOV, N. F.

"Acoustic Thermodynamic Properties of Matter"

Uch. zap. Kursk. gos. ped. in-t (Scientific Notes of the Kursk State Pedagogical Institute), 1970, No 71, pp 7-13 (from RZh-Fizika, No 2, Feb 71, Abstract No 2B68)

Translation: It is shown how it is possible with the help of certain acoustical measurements only to obtain broad information about the microscopic properties of matter, including the high temperature and pressure range. In particular, it is possible to determine the specific heat at constant volume and the coefficients of isothermal and adiabatic compressibility.

1/1

USSR

UDC: 8.74

OTRADINSEY V. V.

"Variant of Dictionary Control in Formalizing Document and Inquiry Indexing"

Nauch.-tekhn. inform. Vses. in-t nauch. i tekhn. inform., Scientific-Technical Information, All-Union Institute of Scientific and Technical Information) Series 2, No 1, 1972, pp 9-12, 31 (from RZh--Matematika, No 7, 1972, Abstract No 7V588)

Translation: Methods are analyzed for using partial morphological and syntactical analysis in the formalized indexing process by using a machine thesaurus. It is shown that in practically operating information retrieval systems the simplest grammatical means are used. The author describes a method of dictionary control using filters of non-key words, dictionaries of basic descriptor branches, and auxiliary descriptors modifying the value of the basic descriptors in the retrieved document forms. Bibliography of 12. Author's abstract.

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USSR

UDC 621.762.4.001

KATRUS, O. A., and OTROK, A. I., Institute of Problems of Material Science,
Academy of Sciences Ukrainian SSR

"Study of the Moldability of Metal Powders for Rolling"

Kiev, Poroshkovaya Metallurgiya, No 8, 1971, pp 36-40

Abstract: The moldability of metal powders with different prehistory of fabrication was investigated. Rolling rolls with 36, 181, 500, and 900 mm diameters were used. Prior to rolling, to reduce volatility the powders were lubricated with water, gasoline, spindle oil, or kerosene. The rate of rolling was in the limits 0.5-8 m/min. The phenomenon of flaking of the rolled stock was investigated as a function of the following factors: 1) granulometric composition of the powder; 2) shape of particles and condition of their surface; and 3) physical condition of the powders. Iron powders were oxidized in air at 500° for 20 minutes. Reduced copper powders were oxidized in room temperature and with prolonged air exposure; electrolytic copper powder was treated with ammoniacal solutions. Other metal powders investigated include: carbonyl iron R10, molybdenum, electrolytic titanium, reduced titanium, and carbonyl nickel FNK-2. Properties tabulated include: bulk weight, weight after shakedown, particle size, and particle shape. Comparison of curves plotting dimensionless thickness of rolled stock as a function of its density showed that, under
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USSR

KATRUS, O. A., et al, Kiev, Poroshkovaya Metallurgiya, No 8, 1971, pp 36-40

otherwise equal conditions, the onset of flaking for the entire series of powders occurs earlier, the larger the roll diameter, that is, for larger absolute thickness of rolled stock. The tendency to flaking is clearly manifested in the region of relatively high porosity, and appears earlier, the finer the powder. These correlations are observed for powders with different pre-history of fabrication (carbonyl, electrolytic, and reduced). In order of their influence on flaking of rolled stock; the properties of the powders studied can be placed as follows: 1) granulometric composition; 2) presence of oxides on particle surface; 3) phase state of powders (quenching, annealing); and 4) particle shape.

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USSR

UDC 615.616.24-003.656.6

GURZHEYEV, A. A., OTROSHCHENKO, N. M.

"Characteristic of the Combined Effect of Coal Dust and Radon Experimentally"

V sb. Materialy XXI-XXII plenumov Resp. komis. po bor'be s sili-kozom (Materials of the Twenty-first to Twenty-second Plenums of the Republic Commission for Controlling Silicosis--Collection of Works), Kiev, Naukova dumka, 1972, pp 117-123 (from RZh--Farmakologiya, Khimioterapevticheskiye Sredstva. Toksikologiya, No 3, Mar 73, Abstract No 3.54.890)

Translation: Under the joint effect of small concentrations of radon (I) creating a radiation dose of more than 76 rads, the effect caused by coal dust on the lung tissue is intensified. The developed anthracosis had a more severe nature and was accompanied by infection of the vessels and bronchial epithelium. The effect of the coal dust in the given experiment did not lead to the accumulation of collagen in the lungs; I had no effect on this process. Under the combined effect of coal dust and I, significant shifts were observed in the composition of the peripheral blood,
1/2

USSR

GURZHEYEV, A. A., OTROSHCHENKO, N. M., Materialy XXI-XXII
pleniumov, Resp. komis. po bor'be s silikozom, 1972, pp 117-123

the thagocytic activity of the laucocytes, the ascorbic acid
metabolism and the basic electrolyte metabolism. USSR. Donetsk,
Medical Institute.

2/2

USSR

UDC 632.95

ZIYAYEV, A. A., OTROSHCHENKO, O. S., SADYKOV, A. S., TOLKACHEVA, G. A.,
AKBAROV, KH. A., and KHODZHAYEVA, T. A.

"A Method of Making β - β' -Di-[piperidyl-2- (or 1-Methylpiperidyl-2)]
Disodium- γ , γ' -Dihydrodipyriddy Carbamate"

USSR Author's Certificate No 343975, filed 13 Jul 70, published 14 Aug
72 (from RZh-Khimiya, No 10, May 73, Abstract No 10N614P by N. V. Lebedeva)

Translation: β , β' -Di-(piperidyl-2)-disodium- γ , γ' -dihydrodipyriddy
carbamate (I) and β , β' -di-(1-methylpiperidyl-2)-disodium- γ , γ' -
dihydrodipyriddy carbamate (II) are synthesized by reacting anabasine (III)
or N-methylanabasine (IV) respectively with dispersed metallic sodium in an
organic solvent in a molecular nitrogen atmosphere at 50-60°C. Example:
50 g of III or IV are added to a suspension of 10 g of Na in PhMe, the reaction
mass is agitated in a stream of N₂ at 50-60°C until the sodium dissolves,
and treated with CO₂. The resultant mass is evaporated, the residue is washed
with n-hexane and filtered giving compound I or II with a yield of 90%, the
melting point of I is above 400°C, molecular weight 458; the melting point of
II is above 400°C, molecular weight 486. The values of R_f are given for I
and II as well as IR-spectral data. I and II can be used as herbicides, and
1/2

USSR

ZIYAYEV, A. A., et al., USSR Author's Certificate No 343975, filed 13 Jul 70,
published 14 Aug 72

also in synthesizing mono- and polyesters containing physiologically active
fragments in the macromolecule.

2/2

1/2 015 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--EFFECTS OF THE ADDITION OF AN EMULSIFIER AND MONOMER IN THE COURSE
OF THE EMULSION POLYMERIZATION OF STYRENE IN THE PRESENCE OF NONIONIC
AUTHOR--(04)-ZUIKOV, A.V., MEDVEDEV, S.S., DUDUKIN, V.V., OTRUSHKO, G.V.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(2) 376-81

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--EMULSION POLYMERIZATION, STYRENE, POLYMERIZATION KINETICS,
BENZOYL PEROXIDE, NITRILE, LATEX

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/0323

STEP NO--UR/0459/70/012/002/0376/0391

CIRC ACCESSION NO--AP0111517

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0111517

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF EMULSION POLYMN. OF PHCH:CH SUB2, INITIATED BY BZ SUB2 O SUB2 OR AZOBISISUBJTYRONITRILE, WAS STUDIED AT 60 PLUS OR MINUS 0.1 DEGREES IN THE PRESENCE OF PROXANDL 228 EMULSIFIER, HO(CH SUB2 CH SUB2 O) SUBX(CH SUB2 CHMED)SUBV(CH SUB2 CH SUB2 GIH (I). THE POLYMN. OCCURRED IN LATEX PARTICLES WHICH CONTAINED ALL OF THE MONJMER INTRODUCED INTO THE SYSTEM. FROM THE BEGINNING OF THE POLYMN., THE LATEX PARTICLES WERE COVERED WITH AN ADSORBED LAYER OF I WHICH INCREASED THEIR STABILITY AND DETD. THE POLYMN. KINETICS.

UNCLASSIFIED

ECON

OTSASON R

IMPORTANCE OF OUTPUT-CAPITAL RATIO IN ESTONIAN INDUSTRY STRESSED
 (Article by R. Otsason, Tallin, Kommunist Estonii, Russian, No 9, 1971,
 pp 24-25)

The XXII CPSU Congress defined the directions for national economic development in the Ninth Five-Year Plan. The planners' improvement of the material well-being of the people will be reflected in such indexes as: increase in national income and real wages of 37-40 and 20-22 percent respectively, an increase of 40 percent in the national consumption fund, and an increase of 30 percent in per capita real income. The percentage for the following three goals is complete use of all production resources and especially fixed capital. The following fact eloquently bears witness to the role of fixed capital in the Soviet Union's economy: in 1970 fixed capital in the national economy was appraised at a value exceeding 2,600 rubles per capita (in 1960 the figure was only 1,470 rubles). The more fixed capital we possess, however, the more pressing is the necessity of utilizing it efficiently.

How to Measure the Degree of Use of Fixed Capital

The fact that in national economic effectiveness may be considered a significant yardstick of the use of fixed capital. From the technical characteristics of machinery, equipment, and buildings are different and therefore investments of labor have different influences on the effectiveness of production — some increase production, others have little effect, while others improve working conditions. In connection with this, the goals and interests of the effectiveness of the investment of capital investment of capital are different. At the same time the net effectiveness of all fixed capital is expressed more completely in the size and growth of the national consumption fund. As a measure of society's interest in it and as an increase in real wages and satisfaction of public demands depend on it.

The consumption fund increases due to production manufactured with new production capital and due to supplementary products obtained from previously existing capital. The growth rate of the consumption fund may be measured by the formula:

JPRS 55837 18 February 1972, TRANSLATION ON USSR ECONOMIC AFFAIRS, No. 355

USSR

UDC: 621.43.001.3

ANTONOV, O. G., DOLINSKIY, D. V., MARCHEVSKIY, V. P., MEL'NICHENKO, R. M.,
OTSECHKIN, Yu. G., PAVLENKO, G. V., TOWLANETS, V. Ye., LINDENBERG, K. B.,
Institute of Automation, Khar'kov Polytechnical Institute

"An Antistall Device"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 13, May 72, Author's Certificate No 335444, Division F, filed 21 Sep 70,
published 11 Apr 72, p 140

Translation: This Author's Certificate introduces an antistall device which may be used for controlling centrifugal compressors. The device contains pickups for the rate of flow and pressure drop across the compressor, an amplifying adder and a regulating valve installed on a bypass line between the pressure and suction channels. As a distinguishing feature of the patent, in order to improve the reliability and accuracy of maintaining the limiting flow rate, a pickup is connected to the amplifying adder which measures the difference in pressures between the wake and channel of the flow behind the vanes of the exit guide cone to correct control in accordance with variations of the static characteristic of the compressor.

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USSR

UDC 539.26-548.735.4

SAVITSKIY, Ye. M., BURKHANOV, G. S., OTTENBERG, Ye. V., and KUZ'MISHCHEV, V. A.

"Study of Deformation and Polygonization of Molybdenum Single Crystals"

Monokristally Tugoplavkikh i Redkikh Metallov [Single Crystals of Refractory and Rare Metals — Collection of Works], Nauka Press, 1971, pp 112-119

Translation: The metallographic, x-ray, laue, and topographic methods are used to study the influence of certain conditions of deformation in rolling along the (100) plane in direction [110] and annealing modes on the fine structure of molybdenum single crystals.

It is demonstrated that with increasing degree of deformation, blocks are broken up, the dislocation density is increased, and stressed areas arise. An increase in the degree of deformation before heating causes an increase in breakup of blocks during heating and their disorientation. The influence of annealing temperature and deformation on the substructure of molybdenum single crystals is established. 8 Figures; 5 Bibliographic References.

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USSR

OTTENBERG, YE. V.

"Fifth All-Union Conference on the Production, Structure, Physical Properties, and Applications of Single Crystals of Refractory and Rare Metals"

Moscow, IAN SSSR, Metally, No 2, Mar-Apr 71, pp 229-230

Abstract: The conference was held in Moscow 30 November-2 December 1970 at the Institute of Metallurgy imeni A. A. Baykov of the Academy of Sciences, USSR. Three hundred persons from 67 organizations heard 54 reports. The conference chairman emphasized in his opening statement that the problems most pressing in the area are the search for effective methods of high purification of refractory metal single crystals, the production of single crystals with high structural perfection, including single crystals with no dislocations, investigation of the inter-relationship of properties with the fine structure of single crystals, determination of new properties, expansion of the range of measured properties, including biological properties, 1/2

USSR

OTTENBERG, YE. V., IAN SSSR, Metally, No 2 Mar-Apr 71, pp 229-230

expansion of work on the growth of single crystals, and the influence of growth conditions on the structure formed. Other subjects covered included: modern installations for growing single crystals of refractory metals; crucibleless zone melting of single crystals of thorium and uranium; zone recrystallization of ruthenium; production of refractory single crystals by deformation and annealing; investigation of the structure of single crystals by various methods; investigation of nonmetallic inclusions in single crystals; diffusion of hydrogen in molybdenum and tungsten single crystals and polycrystals; investigation of the physical properties of single crystals of refractory and rare metals and their alloys; the results of investigation of the emission properties of single crystals; and the investigation of the influence of deformation, annealing in various media, thermal cycling, and radiation on the structure and properties of single crystals of refractory metals and alloys. The next conference will be held in November-December 1971 at the same location.

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USSR

OTTENBERG, Ye. V.

"Fourth All-Union Conference on the Production, Structure, Physical Properties, and the use of Single Crystals of High-Melting and Rare Metals"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 4, Jul-Aug 70, pp 229-230

Abstract: The Fourth All-Union Conference on the Production, Structure, Physical Properties, and the use of Single Crystals of High-Melting and Rare Metals was held November 24-26, 1969, at the Institute of Metallurgy imeni A. A. Baykov of the Academy of Sciences USSR in Moscow. The conference was opened by Ye. M. Savitskiy, Corresponding Member of the Academy. Savitskiy noted that single crystals of practically all of the high-melting and rare metals are being produced and that methods of growing large single crystals of tungsten and molybdenum have been developed. Savitskiy et al discussed the industrial production of large single crystals of tungsten according to the technology developed by the Institute of Metallurgy imeni Baykov. I. A. Brodskiy et al discussed stability problems in molybdenum crystallization in connection with the formation of an admixed substructure. V. M. Anonenko et al reported on

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USSR

OTTENBERG, Ye. V., Izvestiya Akademii Nauk SSSR, Metallurgiya, No 4, Jul-Aug 70, pp 229-230.

the production of high-purity osmium; Ye. M. Murav'yeva et al reported on growing terbium single crystals; A. A. Kralina et al reported on growing yttrium-gadolinium systems; R. K. Chuzhko et al reported on the growth of single crystalline tungsten layers; I. A. Bondar' et al reported on the crystallization of germanates of rare elements; Savitskiy and L. V. Bulgak reported on carbon distribution in single crystalline molybdenum; L. N. Larikov et al reported on the effect of crystallographic orientation on the oxidation kinetics of high-melting single crystals. L. G. Lapshina discussed the use of non-ferrous growing for investigating the structure of molybdenum; V. F. Terekhova et al discussed the structure of thin layers of rare metals; Savitskiy et al discussed the superconducting properties of single crystals of niobium.

Other reports (Savitskiy et al, N. B. Smirnova et al, and B. Bekbauliyeva et al) dealt with investigation results of the emission properties of single crystals.

A series of reports was devoted to the investigation of the effect of external actions on single crystals: Savitskiy et al — the effect of plastic deformation;
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USSR

OTTENBERG, Ye. V., Izvestiya Akademii Nauk SSSR, Metally, No 4, Jul-Aug 70, pp 229-230

A. I. Yevstyuknin et al — the interaction between hardening and texture formation processes; Savitskiy et al — the effect of temperature on single crystals; A. L. Suvorov et al — defects of α -irradiation on tungsten single crystals; N. V. Dubovitskaya et al — the dislocation substructure of molybdenum single crystals after rolling and annealing; Ye. E. Zashchuk et al — polygonization and recrystallization of molybdenum single crystals.

The production of semifinished articles from single crystals of high-melting metals was discussed in three reports of Savitskiy et al.

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USSR

UDC 621.373.531

LIVSHITS, A. L., ROGACHEV, I. S., OTTO, M. SH.

Generatovy impulsoy (Pulse Generators), Moscow, Energiya Press, 1970, 224 pp
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9G240K)

Translation: A classification and description of the operating principles and methods of calculating strong current pulse generating systems used basically in electrophysical and to a lesser degree in electrochemical machine tools are presented. The book is designed for engineering-technical and scientific workers, graduate students and students dealing with the problems of strong current pulse engineering as applied to new methods of dimensional embossing.

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USSR

UDC: 621.315.582

CHEBAN, A. G., NEGRESKUL, V. V., OUSH, P. T., GORCHAK, L. V.,
UNGURYANU, G. I., and SMIRNOV, V. G.

"Solar Elements Using p-GaAs_{1-x}P_x-n-GaAs Heterojunctions"

Tashkent, Geliotekhnika, No 1, 1972, pp 30-33

Abstract: The results of investigations made for determining the volt-ampere, load, and spectral characteristics of heterojunctions made by liquid epitaxial growth of solid solutions of GaAs_{1-x}P_x on a GaAs substrate. The purpose of the research was to estimate the possibilities of using the p-GaAs_{1-x}P_x-n-GaAs system as photoconverters. For the substrate, n-type GaAs with a μ of 2500-3500 cm²/V·sec and an electron concentration of $7 \cdot 10^{16}$ to $4 \cdot 10^{17}$ per cc was used. The crystals of the material were oriented in the (111) plane and were covered by a solution of gallium containing dissolved GaP; the doping impurity was zinc, in a pure hydrogen atmosphere. Crystal growth was made in a temperature range of 760-910° C. Curves are plotted for the volt-ampere characteristic, the load characteristic, and the spectral distribution of the vapor collection coefficient for the heterojunctions. The basic advantage of the materials is that, in the form of solar elements, they can be used for operation at temperatures above 200° C, with an increase in the utilization percentage of the solar spectral energy.

Mechanical and Optical

USSR

UDC 621.01

QVAKIMOV, A. G., Candidate of Technical Sciences

"Reduction of Masses of Three-Dimensional Satellite Mechanisms With Two and One Degrees of Freedom"

Moscow, Izvestiya VUZ Mashinostroyeniye, No 8, 1970, pp 48-54

Abstract: General formulas are presented which can be used to calculate the inertial coefficients of the equations of motion of differential and planetary mechanisms with bevel gears. These coefficients are determined as components considering the inertial nature of the individual links in the mechanism. The final formulas contain projections of the analogues of the angular velocities -- vectors which are also used for reduction of forces.

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1/2 033 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--QUANTITATIVE CHARACTERISTICS OF THE RADIOPROTECTIVE EFFECT OF
MEXAMINE -U-
AUTHOR--(05)-YARMONENKO, S.P., SUVOROV, N.N., KAROCHKIN, B.B., AIRAPETYAN,
G.M., OVAKIMOV, V.G.
COUNTRY OF INFO--USSR
SOURCE--RADIOBIOLOGIYA 1970, 10(2), 78-82
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ANTIRADIATION DRUG, AMINE DERIVATIVE, X RAY IRRADIATION, GAMMA
RADIATION, CESIUM ISOTOPE, RADIATION DOSAGE, BONE MARROW

CONTROL MARKING--NO RESTRICTIONS.

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1998/0460

STEP NO--UR/0205/70/010/001/0078/0082

CIRC ACCESSION NO--AP0121134

UNCLASSIFIED

242 - 033

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0121134

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RADIOPROTECTIVE EFFECT OF
MEXAMINE (I) WAS EVALUATED QUANT. ON THE BASIS OF NOS. OF SURVIVING MICE
AND RATS. THE ANIMALS WERE IRRADIATED WITH 700, 800, 900, OR 1000 R 180
KEV X RAYS, AND 950 R OF 190 KEV R RAYS, OR 1100 R PRIME137 CS GAMMA
RAYS. I WAS APPLIED IN DOSES OF 1, 2.5, 5, 7.5, 15, 30 OR 75 MG-KG BODY
WT. AND 2.5, 5, 10, 20, OR 40 MIN PRIOR TO THE IRRADN. IN BOTH MICE AND
RATS, A SLIGHT PROTECTIVE EFFECT OF I WAS OBSERVED AT ALL DOSES
FOLLOWING I.P. APPLICATION. INCREASING DOSES OF I RESULT IN INCREASES
IN THE MAGNITUDE AND DURATION OF THE PROTECTIVE EFFECT. THE PROTECTIVE
ACTION APPLIES NOT ONLY TO THE BONE MARROW, BUT ALSO TO THE GASTRO
INTESTINAL SYNDROME. HOWEVER, THE DURATION OF THE PROTECTIVE ACTION IS
SHORT. WITH DIFFERENT I DOSES THE PERCENTAGE OF SURVIVING MICE
INCREASED FROM 0 TO 12-85PERCENT. FACILITY: INST. GIG. TRUDA
PROFAZABOL., MOSCOW, USSR.

USSR

AGEYEV, A. N., KISELEV, M. I., OVAKIMYAN, R. N.

"On the Flutter of a Current-Carrying Shell"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 40, No 6, Jun 1970,
pp 1159-1160

Abstract: The stability of current-carrying structures in high-velocity flows of a cooling liquid is studied, since it represents a subject of definite practical interest. The stability of a cylindrical, ideally conducting, current-carrying shell containing a current of ideal incompressible and nonconducting liquid is considered. It is shown that the magnetic field produced by the electric current and the flow of the liquid, as would be expected, lower the stability of the shell. The equation for small radial perturbations in the shape of the cylindrical shell is solved and expressions are given for values of the flow velocity and current under which the system becomes unstable. It is stated that conditions for loss in stability for a shell of finite length can also be established without difficulty.

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1/2 026 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--VARIATIONS IN QUANTITATIVE CORRELATIONS IN BLOOD PHOSPHOLIPIDS
FOLLOWING THE DEVELOPMENT OF EXPERIMENTAL THROMBOSES -U-
AUTHOR-(03)-KARAGEZIAN, K.G., OVAKIMYAN, S.S., MIRZAAVAKYAN, G.L.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(1), 250-2
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--BLOOD, PHOSPHOLIPID, THROMBOSIS, DOG, BLOOD COAGULATION,
POTASSIUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3005/1664 STEP NO--UR/0020/70/191/001/0250/0252
CIRC ACCESSION NO--AT0133569
UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--ATO133569

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN EXPTL. THROMBOSIS IN DOGS IT WAS FOUND THAT WITHIN 2 DAYS OF ITS DEVELOPMENT THE SHIFTS IN THE LEVEL OF PHOSPHOLIPIDS WERE CONSIDERABLE, ESP. IN THE APPENDAGE AFFECTED BY THROMBOSIS. THESE CHANGES, BESIDES INTRAVASCULAR THROMBOFORMATIONS AND LOCAL DISTURBANCES, INVOLVE NEUROHUMORAL SHIFTS. THE CHANGES IN THE CLOTTING OF THE BLOOD DEVELOP WITHIN 2 DAYS ALONG WITH ACTIVATION OF BLOOD CLOTTING IN BOTH LIMBS OF THE EXPTL. ANIMALS. LOWERED K IN FIBRINOGEN DEVELOPS IN THESE 2 DAYS AND MAY BE CAUSED BY REFLEX RISE OF ACID PHOSPHOLIPIDS IN THE BLOOD. FACILITY: INST. BIOKHM., EREVAN, USSR.

UNCLASSIFIED

USSR

UDC 621.039.531:539.3

OVANDER, L. N.

"On the Theory of the Effect of Neutron Irradiation on Metal Creep"

Moscow, Atomnaya Energiya, Vol 29, No 5, Nov 70, p 381

Abstract: The passage of a neutron flux through a crystal lattice produces various defects in the lattice. The article considers only dislocation loops and vacancies in relation to their effect on the plastic flow of the crystal. Following J. WEERTMAN, the author assumes that the stress applied to a specimen is great enough to cause the shifting of dislocations. However, this movement ceases under the action of obstacles such as Lommer-Cottrell sessile dislocations, which form during deformation. Calculation of the deformation rate requires finding the rate of the upward movement of a dislocation. The formula

$$\dot{\epsilon} = Q M c_p \left\{ \frac{\Delta c}{c_p} + \left(\frac{\omega \sigma}{k T} - 1 \right) \right\} \sigma^n,$$

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= 39 .

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OVANDER, L. N., Atomnaya Energiya, Vol 29, No 5, Nov 70, p 381

is derived for this purpose. All dislocation complexes are arbitrarily divided into two groups. In the first group (consisting of "positive" complexes) there is vacancy "absorption" under the action of stress, while in the second group ("negative" complexes) there is "emission." Under the influence of vacancy supersaturation the contribution to the creep rate value will be increased by "positive" and decreased by "negative" complexes. Since Δc enters linearly into the above formula, these contributions compensate one another and as a whole supersaturation Δc makes no contribution to creep acceleration. Therefore, G. SCHNOECK's conclusion regarding the influence of Δc on the creep rate is erroneous. As for the influence of radiation dislocation growth, this growth can be regarded as an increase in the number of sources M . An increase in M has the same effect on "positive" and "negative" complexes. Thus, an increase in creep in the WEERTMAN model should be related only to an increase in the number of dislocations, rather than vacancy supersaturation.

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